REMARKS

In response to the Office Action mailed January 22, 2008, Applicants respectfully request reconsideration. Claims 1, 3, 5, 7, and 10 were previously pending in this application. Claim 10 has been amended. Claims 1, 3, 5, 7, and 10 are pending for examination with claims 1, 3, 5, and 7 being independent. The application is believed to be in condition for allowance.

Rejections under 35 U.S.C. § 112

The Office Action rejects claims 1, 3, 5, and 7 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. Specifically, the Examiner has difficulty to figure out what it means by "load approaching balance" and "a load to approach balance." The load is balanced when the traffic is distributed evenly across the composite trunk. The term approaching means that the load is moving towards a balanced state.

The load is not approaching balance, for example, if one output trunk of a composite trunk becomes a bottleneck. In such an example, the fabric forwarding table can be adjusted to dynamically balance the load across the output trunks. The load can be balanced by finding a forwarding table entry that directs packets to the overloaded output trunk and rewriting the route in this entry to direct packets to a more lightly loaded output trunk. By adjusting routes, and hence the distribution flows, the load incrementally approaches perfect balance across the output trunks. (*See* Specification page 5, lines 12-16; page 7, lines 9-20; and page 9, lines 19-27.)

Further, the Examiner rejected claims 5 and 10 due to insufficient antecedent basis. In response to the rejections, claim 10 has been amended to address the Examiner's concerns. Applicants respectfully disagree with claim 5 rejection. The "destination" in line 8 is referring to "identifying a destination of the IP data packets" in line 3. Therefore, there is sufficient antecedent basis for "the destination" in claim 5.

Claims 1, 3, 5, 7, and 10 are believed to meet the requirements of 35 U.S.C. § 112, second paragraph. Reconsideration of the rejections under 35 U.S.C. § 112, second paragraph, is respectfully requested.

Rejections under 35 U.S.C. § 103

The Office Action rejects claims 1, 5, and 10 under 35 U.S.C. § 103(a) as being unpatentable over Chapman et al., U.S. Patent No. 6,233,245 B1 (Chapman) in view of Maciel et al., U.S. Patent No. 6,112,248 (Maciel). The Office Action rejects claims 3 and 7 under 35 U.S.C. § 103(a) as being unpatentable over Chapman in view of Pascucci et al., U.S. Patent No. 5,598,566 (Pascucci).

Applicants respectfully disagree with these rejections for the reasons set forth below and reconsideration is requested.

An example of one embodiment of Applicants' invention is described below to highlight some aspects of the invention. It should be appreciated that the description below is an example of one of many embodiments that fall within the scope of Applicants' claims and is provided for the purpose of highlighting some aspects of Applicants' invention, not as a limitation of the claims.

An embodiment of the present invention is an Internet router including a composite trunk between two points. A composite trunk is an aggregation of multiple physical links into one trunk for moving data from one point to another. For example, referring to Applicants' Figure 2, a composite trunk 10 consists of four trunks 11-14 for moving data between router 1 and router 2. Generally, a router is a device that determines the next network point to which a packet should be forwarded toward its destination. A router typically maintains a routing table to determine the best route for a given packet to the next hop towards the packet's destination. Figure 5A shows an example of a traditional routing table in which each destination IP address is associated with a specific output trunk. For example, in Figure 5A, destination A is associated with trunk 11. A method used in the router of this invention, in which a destination IP address may be associated with either a specific port and output trunk or a composite output port and trunk, is shown in Figure 5B. For example, in Figure 5B, destination A is associated to composite trunk 10.

An output port selector balances the load across the trunks of the composite trunk. By distributing the fabric routes across the individual trunks comprising the composite trunk, traffic is distributed evenly across the composite trunk and thus balanced. The output port selector determines the output port by table lookup. More specifically, a routing table maps destination

addresses to composite trunks, and a fabric forwarding table (*See* Fig. 6) maps composite trunks to sets of possible routes within a routing fabric. If one output trunk of a composite trunk becomes a bottleneck, the fabric forwarding table can be adjusted to dynamically balance the load across the output trunks. The load can be balanced by finding a forwarding table entry that directs packets to the overloaded output trunk and rewriting the route in this entry to direct packets to a more lightly loaded output trunk. The output port selector thus dynamically balances the load across the links of a composite trunk.

In the Office Action at pages 4 and 7, the Examiner states that with respect to claims 1 and 3, Chapman discloses "a plurality of trunk ports, including a composite port of plural ports to plurality trunks which serve as a composite trunk to a common destination ('physical links 362, 364 and 366' interpreted as a plurality of trunk ports; Fig. 3, col. 4, lines 45-52)." The Examiner further states at pages 5 and 8-9 that with respect to claims 5 and 7, Chapman discloses "selecting one of plural trunks forming a composite trunk to the destination based on a destination IP address of the IP data packets, the trunk being selected according to a table ('the address filed in an IP data packet indicates the destination of the data packet' interpreted as selecting one of plurality trunks forming a composite trunk to the destination based on a destination IP address of the IP data packet, the trunk being selected according to a table; Fig. 3, col. 2, lines 29-38, col. 7, lines 46-61)." The Applicants respectfully disagree.

Chapman does not describe a plurality of trunk ports, including a composite port of plural ports, to plural trunks that serve as a composite trunk to a common destination. Rather, each of the physical links 362, 364 and 366 can be compared to one of the physical links 1, 2 and 3 to route A in Fig. 1. Each link is a trunk, and the trunks are connected to distinct destinations. For example, the single link 3 is connected to router 200 at node A and router 210 at node C. (Chapman, column 4, lines 36-43 and Figure 2.) Routers 200 and 210 are similar to the prior art router with respect to the functionality of determining the best route for a given packet to the next hop towards the packet's destination. For example, the single physical link 364 is connected to input port G and output port F. The output port G of physical link 364 carries data to the next hop. (Chapman, column 4, lines 49-52.) In contrast, Applicants have multiple output ports to multiple physical links to a common destination. For example, referring to Applicants'

Figure 3, a packet arriving on trunk 31 destined for composite trunk 10 may utilize one of multiple output ports (e.g., line cards 41-44) connected to respective trunks 11-14.

Chapman has a multiple queue structure associated to a single physical link for reducing congestion caused by high volume traffic streams. IP data packets arriving at an input port of the router and directed to the output port are stored in separate queues according to the bandwidth requirements of each packet. (Chapman, column 6, lines 25-38.) In one example, there are two separate queues, one queue being dedicated for video/bandwidth, the other queue being reserved for the rest of the traffic that is transported over the bandwidth controlled physical link. (Chapman, column 2, lines 42-60.) The separation of traffic in different queues limits the likelihood of high bandwidth data transmission interfering with the transmission of other traffic. (Chapman, column 2, line 66 to column 3, line 5.) However, as shown in Chapman's Figure 5, the two queues are coupled to a single physical link, not to plural links of a composite trunk.

In contrast, Applicants' invention includes a composite port of plural ports to plural trunks which serve as a composite trunk to a common destination. As shown in Figure 2, trunks 11-14 are treated as a single composite trunk 10. (Specification, page 5, lines 8-17.) Applicants' invention takes advantage of the single composite trunk having plural ports to plural trunks to a common destination to balance the load across the trunks of the composite trunk. As discussed above, the output selector is able to balance the load across the trunks of the composite trunk. Chapman fails to imply, suggest or make obvious "a composite port of plural ports to plural trunks which serve as a composite trunk to a common destination" as required in independent claims 1, 3, 5, or 7. Likewise, Maciel and Pascucci do not teach these claimed elements.

Dependent claim 10 depends directly or indirectly from independent claim 5 and therefore includes all of the limitations of independent claim 5. Consequently, dependent claim 10 is allowable for at least the same reasons as argued above with respect to claims 1 and 5. Accordingly, withdrawal of this rejection is respectfully requested.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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